

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of claims in the application.

1. (Original): A circuit pattern inspection apparatus for inspecting a conductive pattern of a circuit board, said conductive pattern including first and second comb-shaped conductive patterns each of which has a plurality of terminal portions arranged substantially parallel to each other and an integral base portion connecting respective anchor ends of said terminal portions together, the terminal portions of said first comb-shaped conductive pattern being alternately arranged with respect to the terminal portions of said second comb-shaped conductive pattern, said circuit pattern inspection apparatus comprising:

first and second detection means each having a detection electrode for detecting a signal from said first and second comb-shaped conductive patterns;

inspection signal supply means for supplying an AC inspection signal to said first comb-shaped conductive pattern;

low-voltage control means for controlling a voltage level of said second comb-shaped conductive pattern to be less than the level of said AC inspection signal supplied from said inspection signal supply means; and

moving means for moving each of said first and second detection means across said terminal portions, while allowing each of said first and second detection means to be spaced apart from said terminal portions by a given distance so as to form a capacitive coupling therebetween,

wherein said moving means is adapted to move said first detection means across an anchor-end region of each terminal portion of said first comb-shaped conductive pattern supplied

with said AC inspection signal and a tip-end region of each terminal portion of said second comb-shaped conductive pattern controlled at said lower-voltage level, and simultaneously move said second detection means across an anchor-end region of each terminal portion of said second comb-shaped conductive pattern and a tip-end region of each terminal portion of said first comb-shaped conductive pattern, whereby said first and second detection means generates detection signals allowing the presence of a defect in each of said first and second comb-shaped conductive patterns to be determined based thereon.

2. (Original): The circuit pattern inspection apparatus as defined in claim 1, wherein said low-voltage control means is adapted to control the voltage level of said second comb-shaped conductive pattern to be a ground level.

3. (Original): The circuit pattern inspection apparatus as defined in claim 1 or 2, wherein:
at least each terminal portion of said first and second comb-shaped conductive pattern has a given resistance value; and

said moving means is adapted to move each of said first and second detection means across said terminal portions, while allowing each of said first and second detection means to be located adjacent to each tip end and anchor end of said terminals associated therewith.

4. (Original): A circuit pattern inspection method for use with a circuit pattern inspection apparatus for inspecting a conductive pattern of a circuit board, said conductive pattern including first and second comb-shaped conductive patterns each of which has a plurality of terminal

portions arranged substantially parallel to each other and a base portion connecting respective anchor ends of said terminal portions together, the terminal portions of said first comb-shaped conductive pattern being alternately arranged with respect to the terminal portions of said second comb-shaped conductive pattern, said circuit pattern inspection apparatus including first and second detection means each having a detection electrode for detecting signals from said first and second comb-shaped conductive patterns, said method comprising:

supplying an AC inspection signal to said first comb-shaped conductive pattern, and allowing said second comb-shaped conductive pattern to have a voltage level less than the level of said AC inspection signal supplied to said first comb-shaped conductive pattern; and

moving said first detection means across an anchor-end region of each terminal portion of said first comb-shaped conductive pattern supplied with said AC inspection signal and a tip-end region of each terminal portion of said second comb-shaped conductive pattern having said lower-voltage level, and simultaneously move said second detection means across an anchor-end region of each terminal portion of said second comb-shaped conductive pattern and a tip-end region of each terminal portion of said first comb-shaped conductive pattern, so as to determine the presence of a defect in each of said first and second comb-shaped conductive patterns in accordance with respective detection signals from said first and second detection means.

5. (Original): The circuit pattern inspection method as defined in claim 4, wherein at least each terminal portion of said first and second comb-shaped conductive pattern has a given resistance value, wherein said circuit pattern inspection method includes moving each of said first and second detection means across said terminal portions, while allowing each of said first and

second detection means to be located adjacent to each tip end and anchor end of said terminals associated therewith.

6. (Original): The circuit pattern inspection method as defined in claim 4 or 5, which includes allowing said second comb-shaped conductive pattern to have a low voltage level.

7. (Currently amended): The circuit pattern inspection method as defined in ~~either one of claims 4 to 6~~ claim 4 or 5, which includes, based on a detection result that each of said first and second detection means generates a detection signal having a high level when they are moved across each terminal portion of said first comb-shaped conductive pattern supplied with said AC inspection signal, and each of said first and second detection means generates a detection signal having a low level when they are moved across each terminal portion of said second comb-shaped conductive pattern controlled at said lower-voltage level, determining said first and second comb-shaped conductive patterns are normal.

8. (Original): The circuit pattern inspection method as defined in claims 7, which includes:
based on a detection result that each of said first and second detection means generates a detection signal having a high level when they are moved across each terminal portion of said second comb-shaped conductive pattern controlled at said lower-voltage level, determining that said first comb-shaped conductive pattern supplied with said inspection signal is short-circuited around at least one of the anchor ends of the terminal portions thereof; and

based on a detection result that each of said first and second detection means generates a detection signal having a low level when they are moved across each terminal portion of said first comb-shaped conductive pattern supplied with said inspection signal, determining that said second comb-shaped conductive pattern controlled at said lower-voltage level is short-circuited around at least one of the anchor ends of the terminal portions thereof.

9. (Original): The circuit pattern inspection method as defined in claims 7, which includes:

based on a detection result that a detection signal of said first detection means generated when moved across a specific one of the terminal portions of said second comb-shaped conductive pattern controlled at said lower-voltage level has a higher level than that of a detection signal of said first detection means generated when moved across each terminal portion of said first comb-shaped conductive pattern supplied with said inspection signal, and a detection signal of said second detection means generated when moved across said specific terminal together with said first detection means has a lower level than that of a detection signal of said second detection means generated when moved across another terminal portion of said second comb-shaped conductive pattern, determining that said specific terminal portion of said second comb-shaped conductive pattern is disconnected; and

based on a detection signal that a detection signal of said first detection means generated when moved across a specific one of the terminal portions of said first comb-shaped conductive pattern supplied with said inspection signal has a higher level than that of a detection signal of said first detection means when moved across another terminal of said first comb-shaped conductive pattern, and a detection signal of said second detection means generated when moved across said

specific terminal together with said first detection means has a lower level than that of a detection signal of said second detection means generated when moved across each terminal portion of said second comb-shaped conductive pattern controlled at said lower-voltage level, determining that said specific terminal portion of said first comb-shaped conductive pattern is disconnected.